Sub A1

~~CLAIMS~~

1. Control method for a biaxial wheel test stand for simulating driving loads, which consists of a load unit having a servo-hydraulic vertical load cylinder for adjusting a vertical force, a servo-hydraulic horizontal load cylinder for adjusting a horizontal force, and a pivot head which can be adjusted by means of a camber cylinder for adjusting the camber angle of a wheel to be tested, and which comprises a drive unit with a driven drum having starting rings, to which the wheel to be tested is pressed with the load unit, whereby the vertical load cylinder and the horizontal load cylinder are adjusted by controlling the force and the camber cylinder by controlling the angle, **characterized in that** the adjustment of the horizontal force (Fh), the vertical force (Fv) and the camber angle ( ) are carried out in dependence on the wheel radial force (Fr) and the wheel side force (Fa) determined during a road test, and that the position (R_{Ds}) of the point (P) of application of the resulting force (F_{res}) of the wheel radial force (Fr) and the wheel side force (Fa) are used as the control magnitude for the camber angle( ).

2. Control method according to claim 1, **characterized in that** the camber cylinder force (Fs) is measured as the control magnitude for the use of the point (P) of the application of the force.

3. Control method according to claim 2, **characterized in that** the camber cylinder force (Fs) is measured by means of a measuring tin arranged at the camber cylinder.

4. Control method according to one of claims 1 to 3, **characterized in that** the position (R_{Ds}) of the point of application of the resulting force (F_{res}) is defined by the distance of the point (P) of application of the force from the wheel center (x').

5. Control method according to one of claims 1 to 4, **characterized in that** the distance (R_{Ds}) of the of the point (P) of application of the resulting force (F_{res}) from the wheel center (x') is determined by means of the equation

$$R_{Ds} = (M_{Fs} + Fa \times R_{dyn})/Fr - a1$$

wherein

M_{Fs}: momentum of the camber cylinder force (Fs) around the pivot point (S) of the camber angle;

Fa: axial wheel side force from the road test;

Fr: radial wheel radial force from the road test;

R_{dyn}: dynamic roll radius;

a1: distance of the pivot point (S) of the camber angle to the tire center (x').

6. Control method according to one of claims 1 to 5, **characterized in that** the vertical force (Fv), the horizontal force (Fh), and the camber angle ( ) are changed by means of a control or evaluation unit, until an unambiguous solution for the equations

$$R_{Ds} = (M_{Fs} + Fa \times R_{dyn})/Fr - a1 \text{ and}$$
$$Fv = - Fr \times \cos(\ ) + Fa \times \sin(\ ) \text{ and}$$
$$Fh = - Fr \times \sin(\ ) - Fa \times \cos(\ )$$

has been found with R_{dyn}, R_{Ds}, Fa and Fr determined during the road test or on the even roll-off test stand.

7. Control method according to one of claims 1 to 6, **characterized in that** the position of the point (P) of application of the force is moved to the tire center (X') in a first approximation.

8. Wheel test stand for executing the method according to one of claims 1 to 7 for simulating driving loads on vehicle wheels

with a load unit comprising a servo-hydraulic vertical load cylinder which is controlled by force for adjusting a vertical force, a servo-hydraulic horizontal load cylinder which is controlled by force for adjusting a horizontal force, and a pivot head which can be adjusted by means of a

servo-hydraulic camber cylinder which is controlled by the angle for adjusting the camber angle of the wheel to be tested,

with a drive unit which comprises a driven drum with starting rings, to which the wheel to be tested can be pressed by means of the load unit, and

with a control and evaluation unit for adjusting the horizontal force, the vertical force and the camber angle,

characterized in that the wheel radial force (Fr) and the wheel side force (Fa) known from the road test can be entered into the control and evaluation unit as an input magnitude, and that a measuring unit is provided which measures the camber cylinder force (Fs) acting on the camber cylinder.

9. Wheel test stand according to claim 8, **characterized in that** the measuring device consists of a measuring tin assigned to the camber cylinder.

ADD
A3